

AST[®]

COMPUTER

w w w . a s t . c o m



User's Guide

Personal Computer User's Guide



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CCTY9/99

Certification Notices

FCC Compliance



This product complies with Part 15 of the Federal Communication Commission Rules, and has been tested and verified to comply with EMI requirements. Only FCC Class B certified peripheral devices may be connected to this equipment. Operation with non certified peripheral devices is likely to cause interference to radio/television reception.

These requirements are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio/tv communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception (which can be determined by turning the equipment on and off), follow these suggestions to correct the interference:

- Adjust or relocate the receiving antenna.
- Increase the distance between the equipment and receiver.
- Connect the equipment to an electrical circuit different than the receiver's.
- Consult an authorized radio/tv technician for assistance.

Year 2000 Compliance



This product has been tested and qualified for NSTL Year 2000 Compliance.

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Before Using Your AST Computer...

For your own safety, and to minimize the risk of accidental damage to your equipment, always observe the following precautions:

Read and follow all instructions. Save these instructions for future use.

Follow all warnings and instructions marked on the products.

Your AST computer is not a toy. To minimize risk of accidental injury or damage to your equipment, keep young children away from it.

Always set up your computer on a desk, tabletop or other stable (vibration free) surface. Do not drop the computer. If it has been accidentally dropped, do not attempt to use it. Contact qualified service personnel for assistance.

WARNING: To minimize risk of fire or electrical shock, do not expose the computer to rain or moisture. It should be located in a cool, clean, dry area away from heat, direct sunlight and dust.

Do not place the computer near a radiator or heat outlet, or in an enclosure unless it is properly ventilated.

CAUTION: The computer case features several ventilation openings to protect it from overheating. To avoid risk of damage due to overheating, do not block or cover ventilation openings.

Your computer should be used only within a temperature range from 41° to 95° degrees Fahrenheit. Humidity levels should be from 30% to 90% (maximum).

WARNING: To reduce risk of electrical shock, do not attempt to service your computer. There are no user-serviceable parts inside. Refer all service issues to your authorized AST retailer or other qualified service personnel.

To avoid risk of electrical shock, always use the factory-equipped power cord.

If necessary, contact your authorized AST retailer to obtain a replacement.

Do not connect the computer's power cord to an electrical outlet until you have properly connected all of your computer system's peripheral devices.

If you need to use an electrical extension cord, it must have a grounded (3-prong) polarized plug. Don't use a cord with an ungrounded (2-prong) plug.

CAUTION: To reduce risk of personal injury or damage to your equipment, your computer's battery must be replaced only with the identical CR-2032 3V Lithium Ion coin cell (or equivalent) battery type. Dispose of used batteries in accordance with the manufacturer's instructions, or as required by local ordinance (*where applicable*). Contact your AST retailer for battery replacement assistance.

About Your AST Computer

Congratulations and thank you for purchasing an AST Personal Computer! Your AST computer features advanced **USB (Universal Serial Bus) technology**.

From Almost Nothing...

If you're wondering what makes USB technology so great, and how much effort is necessary to use it, surprise - almost nothing! Unlike traditional legacy-based computer systems, your AST computer's USB architecture permits **faster data throughput**. USB devices are also **easier to set up** than traditional legacy components (*e.g., serial or parallel devices*)! You can plug USB compatible devices into USB ports *without* worrying about installing expansion cards into your computer, or configuring your system's resources.

...Technology Made Easy!

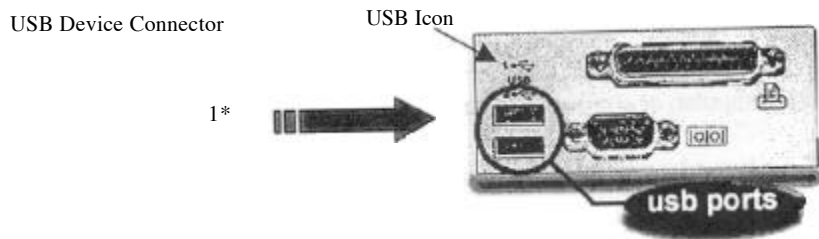
USB technology also makes it easy for you to **expand** your AST personal computer system. You can add optional USB 1.1 compliant components for personal computers easily - just look for the USB symbol (*see page 8*). A variety of USB-ready products are available today, such as pure digital audio, video and telecommunications. You'll **find** USB monitors, digital cameras, modems, audio speakers, disk drives, and other devices available at most computer retailers. Additionally, new USB products and advancements are currently in development.

How USB Got Started

In 1995, a coalition of computer and peripheral device manufacturers under the auspices of the **USB-IF (Universal Serial Bus Implementers Forum)** invented Universal Serial Bus technology. In doing so, they created a mid-to-low-speed serial port/serial bus platform for computer owners. USB features include easy system expendability, shared access, self-configuration of USB compliant devices, host computer independence, universal compatibility across computer architectures and ease of use.

USB = Simplicity!

it's easy to add USB devices to your AST computer system! To install a USB device on your computer (such as your computer's factory-equipped USB keyboard and USB mouse), **just plug it in!** USB devices plug easily into USB *ports* (look for the **USB icon** below). USB device connectors only **fit** into USB ports one way (connectors may be labeled with a *USB icon on top*). If you have trouble inserting a USB connector into a USB port, just reverse the connector's orientation and try again. It's really that simple!



Plugging a USB Device into a USB Part

"Hot Plugging" Your USB Devices

To make USB even easier to use, you can "hot-plug" USB devices to your system. *Hot plugging (or hot swapping)* simply means that you can connect a USB device to (or disconnect it from) your computer *without* shutting down the computer's power first. Your USB components are automatically detected by the system, unlike traditional legacy hardware devices that don't support hot plugging (*e.g., serial or parallel devices*). Legacy devices commonly require that you turn off your system power before connecting them to - or disconnecting them from - the computer. After connecting a legacy device, you generally need to configure your system's resources so that the computer recognizes the device. USB eliminates these headaches, so you're free to plug n play!

1-to-4 Versatility

You'll find several USB ports located on your computer, additional USB device or **hub** (a *USB device that provides additional connections to the Universal Serial Bus*). A hub works the same way as a multiple-outlet power strip or electrical extension cord does - it gives you the freedom to connect as many as **three or**

four USB devices to a single USB port, for virtually unlimited expansion flexibility! As a bonus, there's no need to **worry** about system resource conflicts (for example, specifying IRQ settings), because USB technology allows system resources to be shared. How's that for "Plug n Play" convenience?

How Far Do You Want To Go?

Your AST computer system features **four (4)** rectangle-shaped USB connectors - two on the computer's front panel, and two on the rear panel. You can connect ("daisy-chain") up to **127** USB compliant devices in a "network" type arrangement to a single USB port! These devices use the Universal Serial Bus to communicate and share the connection to your host computer simultaneously.

Most USB devices have USB connectors (hubs) built-in, which you can use to support additional USB devices and stand-alone hubs (up to a total of 127).

All Together Now...

Here's an example of typical USB device connections to your AST computer:

- Your host computer has **2 USB ports** on its **rear panel** (*physical ports 1 and 2*), **and 2 USB Ports** on its **front panel** (*unlabeled ports 3 and 4*). **Note:** USB Port 2 (*rear panel*) is ideal for devices requiring high bandwidth.
- Ideally, your USB keyboard might be connected to the host computer's USB physical port 1 (*rear panel*). The USB mouse could be connected to the computer's USB physical port 3 or 4 (*front panel*).
- A stand-alone hub could be connected to the host computer's USB physical port 2 (*rear panel*). The hub might support a printer and a scanner.
- A second stand-alone hub could be connected to one of the vacant USB physical ports on the first hub. The second hub might support an ISDN modem and another USB device.

Questions & Answers About USB

- What do USB plugs and ports look like?
USB plugs are standardized rectangular-shaped connectors that fit into matching USB ports labeled with the USB icon (see page 8). The plugs insert into the ports only one way. If you have trouble plugging a USB device into a USB port, check the plug's orientation and try again.
- How do I know whether my operating system supports USB? Will I need special software to support USB?
Microsoft Windows 98 provides USB support. Otherwise, no special software is required to use USB. Each USB device contains a specific amount of logic that allows it to be automatically configured for use after you've connected the device to a USB port or hub.

What do I need to know about power requirements for USB devices? *Some USB devices (for example, your USB keyboard or mouse) get their power through the Universal Serial Bus. Other devices may have separate power requirements, such as a USB-ready scanner or modem. If you are uncertain, check the documentation included with the device for details.*

Which applications are best for USB?
USB is a key factor in the growth of digital imaging, telephony and games. USB-ready devices work more efficiently together in these areas because USB architecture has enjoyed industry-wide acceptance from computer and peripheral device manufacturers.

What kinds of peripheral devices can be connected to my computer's USB ports?
USB ready digital cameras, telephones, modems, keyboards, mouse devices, pointing devices, digital joysticks, storage devices, certain CD-ROM drives, digital scanners and customized printers. The data rate for USB is 12 megabits/second, sufficient for "medium-to-low speed" USB peripheral devices. On the horizon, you can expect to see new MPEG-2 video-base products, data gloves and digitizers, and computer telephony integration.

Is USB available on mobile computers in addition to desktops?
Yes. USB is a key feature on most new notebook computers from leading manufacturers. USB allows notebook users to easily share peripherals.

Will traditional serial and parallel ports disappear?

USB won't replace traditional PC serial and parallel ports overnight, but it is rapidly becoming the preferred means of connecting low and medium bandwidth peripherals. Your AST personal computer system can accept non-USB devices connected to the system via a USB port expansion device.

How many USB devices can I connect at one time?

Technically, up to 127 individual USB peripherals can be connected at one time. Some devices reserve USB bandwidth, so the practical maximum number is less than the theoretical maximum. PCI-USB add-in cards provide an independent USB bus for connecting additional peripheral devices. Contact your AST retailer for assistance if you wish to add a PCI-USB card.

Does USB affect the cost of personal computers and peripheral devices?

USB is a built-in feature of most personal computer chip sets, operating system and other system software, which does not significantly affect personal computer prices. By eliminating add-in cards and separate power supplies, USB can help make peripheral devices for personal computers more affordable than they otherwise would be. USBs "hot-swapping" capability also allows business users to easily attach, detach and share peripherals.

How many USB products are being developed?

Over 100 USB products were in the marketplace in early 1999, and hundreds more are in development.

What does it mean when a product is USB compliant?

USB compliance means that USB products are built to match the description in the USB specification. Conscientious manufacturers do a great deal of product testing on their own, and use compliance test programs like the one sponsored by USB-IF to measure how well their products match the USB specification. If you don't find a particular product on the USB-product list, it does not mean there is anything wrong with that product. If you do find it there, however the product manufacturer has put in a lot of effort to ensure that product matches the USB specification and has the best chance of working properly in a variety of applications.

Where can I learn more technical details about USB?

Technical presentations and other details are available from the USB Implementers Forum. Go to <http://www.usb.org> or contact a USB-IF member company directly for specific information about USB products.

Where can I find out what USB products are currently available, or on the way?

For additional information about current USB products and new products slated for release, point your Internet browser to the following internet address: <http://www.usb.org>

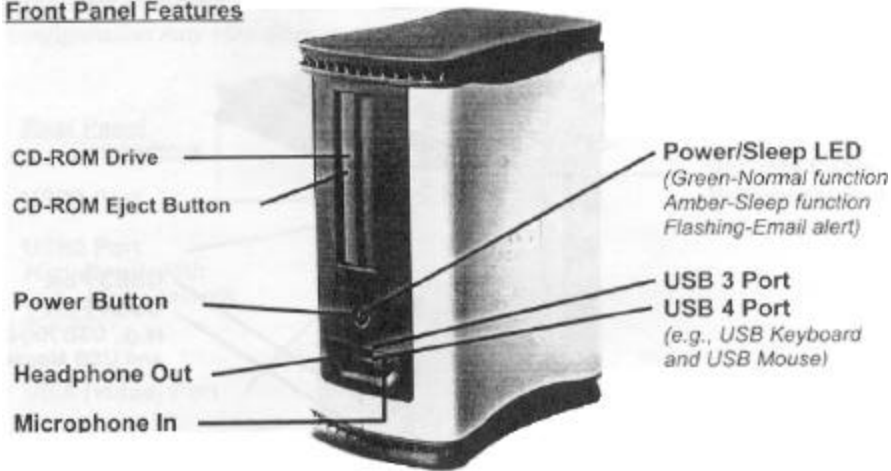
2 Setting Up Your AST Computer

Unpacking Your Computer

Carefully unpack your computer's peripheral devices (*computer case, USB keyboard, USB mouse, optional speakers, etc*) from the shipping carton and set them aside. Save the carton and packing materials for future use. Also, make sure you have any optional peripheral devices close by (such as your display monitor). The following procedures will help you set up your system properly.

Your computer's front panel should appear similar to the figure below.

Front Panel Features

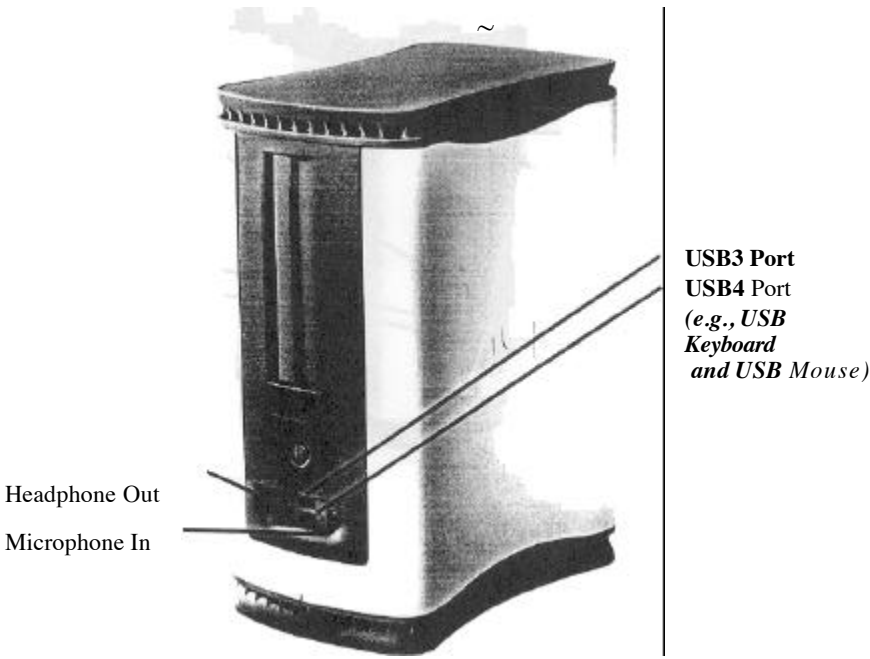


Choosing a Location

- If you haven't done so, see *Before Using Your AST Computer (page 4)* for a complete list of safety tips and suggestions for proper system setup.
- Set up your computer on a desk, tabletop or other stable surface, preferably near an available telephone wall jack. For best results, it should be located in a cool, clean area away from moisture, water, heat, direct sunlight and dust.
- Don't place the computer near a radiator or heat outlet, or within an enclosure unless it is properly ventilated.
- The computer's case features several vents to help protect the system from overheating. To minimize risk of damage due to overheating, never block or cover the vents, or place the computer close to the wall.

Connecting Your System Devices (*Front Panel*)

Your computer's front panel should appear similar to the figure below. You can connect peripheral devices to the following connectors on the front panel:



- **USB3/USB4 Ports (*Front Panel*)**

Depending on your system location, you may want to connect your USB Keyboard to either the USB3 or USB4 port on the computer's front panel (see *page 14*). You can connect your USB Mouse to the adjacent USB port.

- **Microphone In**

You can plug an optional microphone into the **Mic In** connector on your computer's front panel. The microphone can be used for optional features, such as telephony software applications.

- **Headphone Out**

You can plug an optional pair of headphones into the **Headphone Out** connector on your computer's front panel. This feature allows you to enjoy private listening of audio CDs or Internet Radio broadcasts (*optional Internet service provider access is required*).

Connecting Your System Devices (*Rear Panel*)

Your AST computer's rear panel should appear as shown below. (*Your product configuration may vary slightly, depending on the AST product you purchased.*)

Rear Panel Connectors

USSI Port

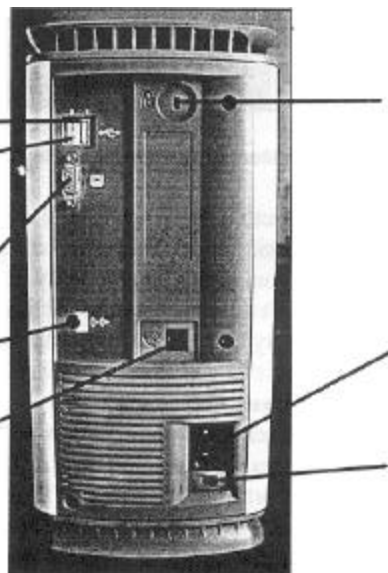
USB2 Port

High Bandwidth (e.g.,
digital camera,
scanner)

VGA (Video) Port

Audio Line Out
(speakers)

Modem (Phone Line)



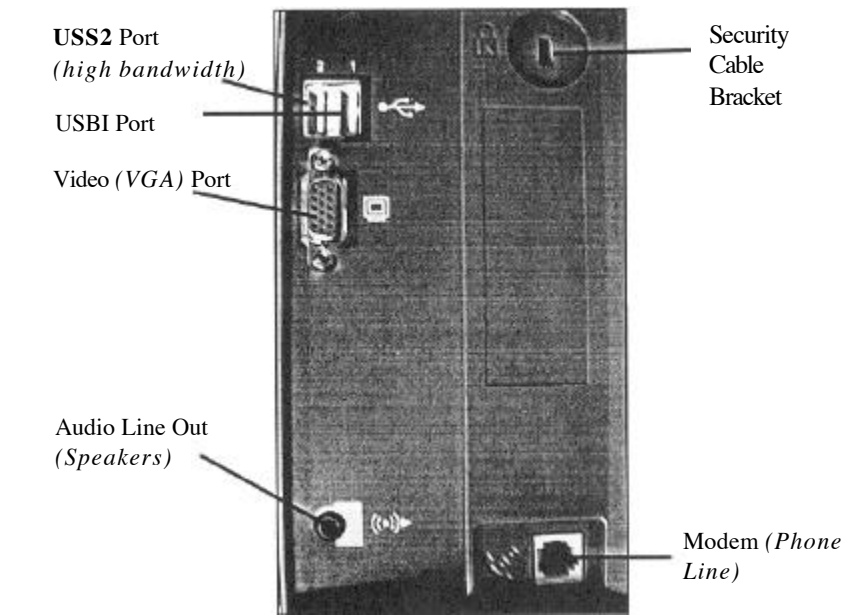
Security Cable
Bracket (*optional*)

AC Power Cord
Connector

Voltage Selector
Switch (*optional*)

You can connect peripheral devices to the following connectors on the rear panel

Rear Panel Connectors



Carefully connect your system's peripheral devices, as discussed below.

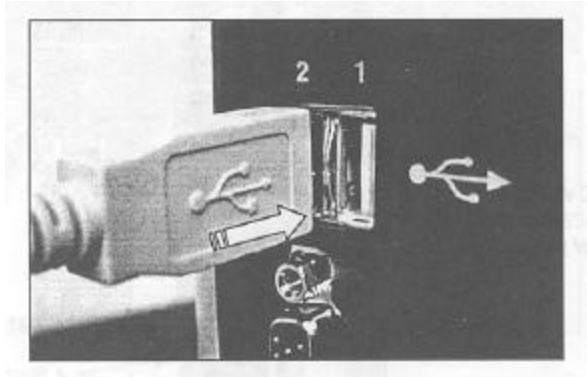
NOTE The cable connectors for your system's peripheral devices can only be plugged into their respective ports one way. **Never try to force a connection** - you could accidentally damage your equipment! If a connector doesn't **fit** squarely into the port, check the orientation of the connector, then try connecting it again.

U USBMSB2 (High Bandwidth) Ports

Your system's USB architecture allows you to connect a virtually unlimited number of USB devices to it (*maximum* = 127). You can connect any USB device to the USB I Port on the rear panel. Optional USB devices that require higher bandwidth (*such as a USB digital camera or scanner*) should be connected to the **USB2 (High Bandwidth) Port** for optimum performance.

Connecting USB Devices (*Rear Panel*)

To connect a USB device to USB1 or USB2 on the rear panel, make sure the USB symbol on the device's cable connector faces right (*toward the USB symbol on the computer's rear panel*) as you insert the connector into the USB port (*see below*).



NOTE If you're using a USB device that requires a separate AC power cord connection, connect the device's AC power cord to your surge protector or grounded AC outlet.

- **Legacy VGA Monitor (*optional*)**

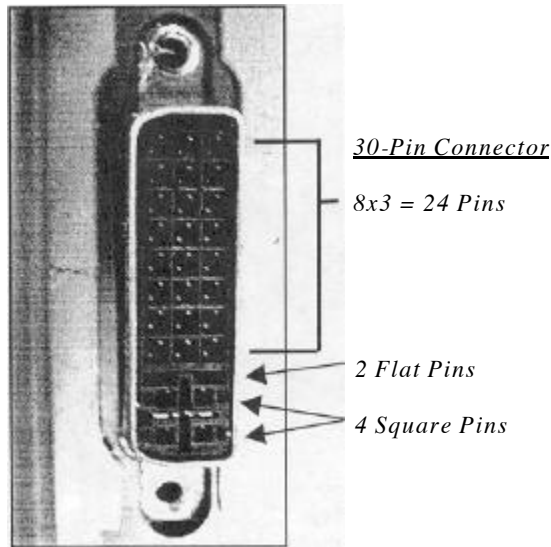
Follow the instructions below to connect an optional legacy VGA monitor to your computer's rear panel.

- 1) Place your legacy VGA video monitor and monitor signal cable near your computer, where you can see the monitor comfortably.
- 2) Carefully connect your monitor's 15-pin signal cable connector to the **VGA Video Monitor** port on the computer's rear panel (*see page 17*). Tighten the twin knobs on both sides of the signal cable connector.
- 3) If necessary, repeat the procedure to secure the other end of the signal cable to your monitor's rear panel connector.
- 4) Connect your monitor's power cord to a surge protector or grounded AC electrical outlet.

- **Digital Video Interface (optional)**

Depending on the product you purchased, some AST computers may feature an optional **DVI port** on the rear panel.

DVI Port
(Close up view of
pinhole detail)



If your AST computer includes a DVI Port, follow the instructions below to connect an optional Digital Video display to your computer's rear panel.

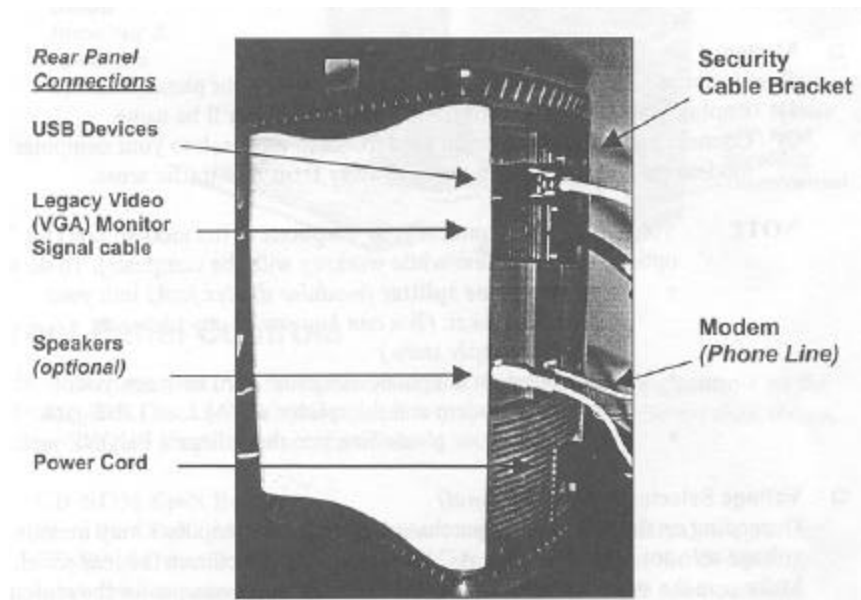
- 1) Place your Digital Video display and signal cable near your computer, where you can see the display comfortably.
- 2) Make sure the display's signal cable connector is oriented so that it will **fit** properly into the DVI port, as shown above.
- 3) Carefully connect the display's signal cable connector to the **DVI port** on the computer's rear panel. If necessary, repeat the procedure to secure the other end of the signal cable to the display's rear panel connector.
- 4) Connect your Digital Video Display's power cord to a surge protector or grounded AC electrical outlet.

- **Audio Line Out**
You can connect an audio output device to the **Audio Line Out** connector, such as an external speaker system (*optional*).
- **Modem**
To connect your computer's modem (*phone jack*) to your phone line:
 - 1) Unplug your telephone cord from the wall jack you'll be using.
 - 2) Connect a telephone extension cord from the wall jack to your computer's modem (*phone jack*). Keep the cord away from foot traffic areas.

NOTE You may wish to connect your telephone to the modem line (for optional phone access while working with the computer). To do so:

 - First, plug a **line sputter** (*modular duplex jack*) into your phone wall socket. (*You can buy one at any phone or electronics supply store*)
 - Next, connect a telephone extension cord between your computer's modem and the splitter's WALL or LINE jack.
 - Finally, plug your phone line into the splitter's PHONE jack.
- **Voltage Selector Switch (*optional*)**
Depending on the product you purchased, some AST computers may include a voltage selector switch near the AC Power Cord Connector on the rear panel. Make sure the switch is set to match local voltage requirements for the region where you'll be using the computer.
- **AC Power Cord Connector (*Rear Panel*)**
After you've connected all of your computer's peripheral devices, connect your computer's power cord to the AC Power Cord Connector on the system's rear panel. Then connect the other end to a surge protector or grounded (*three-pronged*) electrical outlet.

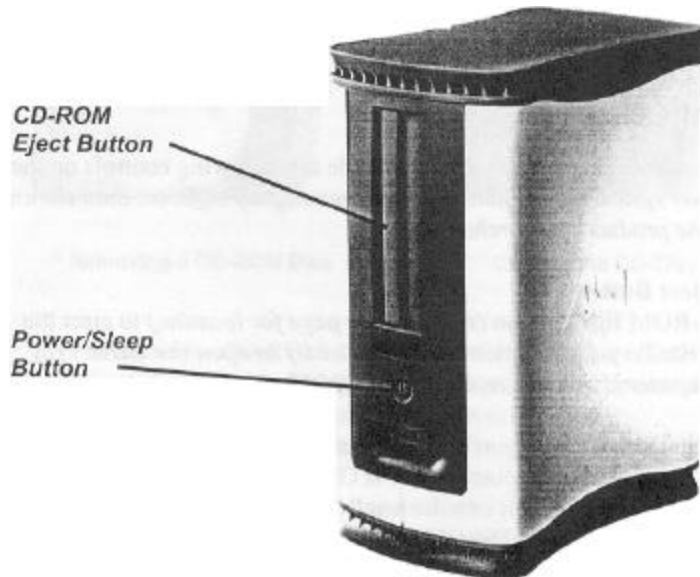
Here's an example of how your rear panel connections should appear (*most systems*):



Turning On Your AST Computer

Now that you've connected all your equipment, press the **Power/Sleep button** on the computer's front panel (*shown below*). Remember to turn on the power switches for other optional components, such as your monitor and printer.

If the system doesn't operate after you've connected your computer's peripheral devices, check the connections (as discussed in the previous section). For additional assistance, see the **Troubleshooting** section of this user's guide.



Fast Scrolling with Your AST Mouse

Your new AST mouse includes a "thumb wheel" feature, located between the left and right buttons (*see next page*). You can ***rotate*** the thumb wheel ***forward or backward*** for **Fast Scrolling (Auto Scrolling)** through Windows and web pages without the need for scroll bars commonly found in these environments.

Typical
System Setup
(monitor &
speakers
optional)



Front Panel Controls

In most cases, your AST computer should include the following controls on the front panel. *(Your system's front panel may appear slightly different than shown, depending on the product you purchased.)*

- **CD-ROM Eject Button**

Press the CD-ROM Eject button (*see previous page for location*) to eject the CD-ROM Drive Tray. *Never press the button or try to open the Drive Tray while the computer is actively reading a CD-ROM or other compact disc.*

NOTE In the event that you need to eject a CD-ROM from the CD-ROM Drive while computer power is OFF, straighten one end of a paper clip. Then insert it into the small pinhole on the front of the drive tray (below the CD-ROM Eject button).

- **CD-ROM Drive Tray**

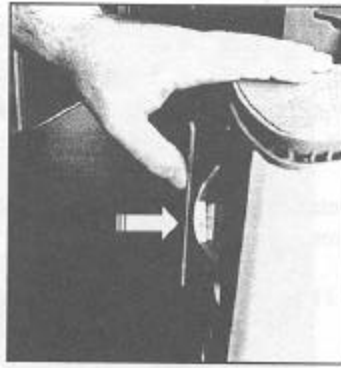
The CD-ROM Drive Tray holds your CD-ROM or audio compact disc so that it can be read or played by the computer. Use the following procedure to load a CD-ROM or audio CD into the CD-ROM drive tray:

Press the CD-ROM Eject Button to eject the drive tray from the computer.

2. To remove a CD-ROM disc or audio CD from the drive tray, grasp the outer edge of the CD. At the same time, gently press the spindle at the center of the disc until you can lift the disc off the spindle. Remove the disc from the tray and store it in its storage case.



Removing a CD-ROM Disc



Closing the CD-Tray

3. Insert a new CD-ROM disc or audio CD sideways into the tray with the disc's labeled side facing out toward you. Press the center of the disc onto the spindle so that it grips the disc securely.
4. Slide the drive tray all the way into the computer until it clicks shut.

- **Headphone Out & Microphone In Jacks**

You can connect a pair of mini-headphones to the Headphone Jack to listen to audio privately without disturbing others. *Note: Whenever headphones are connected to the Headphone Out jack, optional external speakers connected to the Audio Out jack on the computer's rear panel will be automatically disabled.*

To reduce risk of damage to your equipment or accidental injury:

- Always disconnect headphones from the Headphone Out jack when you aren't using them.
- It is recommended that you play audio programming at a low volume level whenever you use headphones.

You can also plug a microphone (*optional*) into the Mic In jack for use with software programs that require microphone input (such as telephony, presentations or karaoke).

- **Power/Sleep Button**

Press this button to turn the system power on or off, or enter Sleep (*Suspend*) mode during periods of reduced system activity. (*See pages 26-27 for details*)

- **Power/Sleep LED**

The LED color indicates the system's power mode:

- Green - Power On
- Flashing Green - Power On w/ Email Message
- Yellow - Sleep Mode (*Power Management*)
- Flashing Yellow - Sleep Mode w/ Email Message

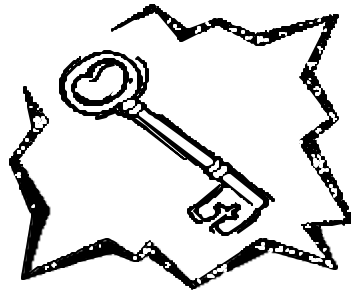
For details about the **Sleep (Power Management)** and **Email notification** features, see pages 26-27.

NOTES Your AST Personal Computer features **Intel Email Notification** software. If you use **Prodigy** or **Microsoft Outlook Express** software (*optional, depending on the product you purchased*) to send and receive email, this feature automatically awakens your system from Sleep mode, logs in and checks for new email, and notifies you if new email has been received (using the blinking LED "Message" indicators discussed above). Afterward, it returns the system to Sleep mode. *Your system must remain in Sleep mode (not Power On)) in order for this feature to function.*

Please note that **Microsoft Outlook** (version 1.0) does not support the Intel Email Notification feature. While future product updates are expected to support this feature, you can utilize Email Notification by choosing either Prodigy or Microsoft Outlook Express to send and receive email.

Troubleshooting

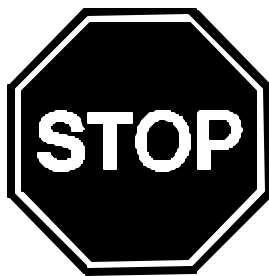
If you experience problems using your AST Personal Computer after setting it up, review the following checklist for possible solutions:



- **No function, no power, no lights**
Turn off the computer's power switch. Check and reconnect cables, if necessary. Make sure your surge protector (*and AC wall socket*) power switches are turned on.
- **No picture - Power light is on, but no display appears**
If you're using a **Digital display**, make sure that its signal cable is securely connected to the **DVI port** on the computer's rear panel.
If you're using a **legacy monitor**, make sure its signal cable is securely connected to the **VGA Video Port** on the computer's rear panel.
- **The screen goes blank after a short while**
The computer's Sleep/Standby (power management) feature may be enabled. Press any key on the keyboard or move the mouse to restore the picture.
- **The screen displays moving patterns after a few minutes**
Press any key on the keyboard or move the mouse to disable your screen saver and restore the picture.
- **No response when typing on the keyboard or moving the mouse** Make sure the keyboard and mouse are plugged into their USB ports securely.
- **No sound output from speaker or when using a microphone**
Make sure the power cord and speaker audio cable are properly connected. The speaker must be connected to either your **Audio Line Out** or **USB** connector. If you've connected a pair of headphones to your computer, disconnect them. Make sure your microphone is plugged into the front panel's **Mic In** connector.
- **The Power LED flashes on and off**
See *If Your Power LED Flashes On and Off* on page 27 for details.

If Your Product Needs Service

Do not attempt to service this product yourself. If you feel that the product is not in proper working order, unplug the unit and seek assistance from qualified service personnel, especially under the following conditions:



If the power cord or plug is damaged or frayed.

If liquid has been spilled on or into the product, or the product has been exposed to rain, water or excess moisture.

If the product has been dropped or the cabinet has been damaged.

If the product exhibits a distinct deterioration in performance, indicating a need for service.

Take A Break (Using the Sleep Feature)

Your AST Computer's Sleep feature allows you to place the system in a low power consumption mode during periods of reduced system activity. This feature is useful, for example, when you're working on an important task, but you just want to take a break for a few minutes without having to shut down your system power. Here's how to use it:



To minimize the risk of lost data, save your work and backup any files you may have been working in before you use the Sleep feature.

Press the **Power/Sleep button** on the computer's front panel for just a moment (1-2 seconds maximum). The Power/Sleep LED should change color from Green to Yellow, indicating that the system has switched to Sleep Mode.

3. To awaken the system, press the Power button again (1-2 seconds maximum). The Power/Sleep LED should change color from Yellow to Green. Normal system activity should resume momentarily, and you can continue working.

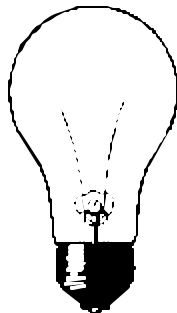
If Your Power LED Flashes On and Off...

Occasionally, you may notice the Power LED flashing on and off (either green or yellow in color). The flashing LED indicates the presence of an email message. For more details about this feature, consult the **Intel e-mail Notification and Retrieval** program's **Help** utility. (See the separate software documentation included with your system for information on **Intel Control Panel Applications**.)

Shutting Down Your System (Power Off)

For best results, always shut down your system (*turn off your system power*) with the Windows 98 Shut Down menu. Here's how to do it:

1. Save your work and close any files you may have been working in, then close and exit from any open software application programs.
2. Click the Start button on the Windows 98 Task Bar. If necessary, click on "Shut Down" in the pop-up menu, then click "OK." (You can also shut down by pressing the Alt+U key combination.) The system should shut down after a few moments, and the Power LED will turn off.



If You Forget to Close A Software Program...

If you forget to close a software program before you power down your AST personal computer, the system will automatically shut down any programs that you may have accidentally left running. A delay will occur before the system power shuts down, to allow the computer to perform a controlled shutdown (close any open software programs).

NOTE Your AST Personal Computer features **Intel e-mail Notification** software. Your system must remain in **Sleep mode** (*not Power Off*) in order for this feature to function.

3 System Features

Motherboard

Your computer's motherboard (main circuit board) is based on the FlexATX form factor, and features advanced multimedia functionality. It incorporates the Intel 82810 chipset, and features integrated Intel advanced graphics performance, I/O Controller Hub with dual USB Channels and dual channel Fast IDE Interface, and ACPI 1.0 power management.

Processor/Integrated Cache

Optional Intel PPOA 370-pin socket processor with integrated L2 cache, depending on the product you purchased.

Graphics/Memory Controller Hub (GMCH)

- Intel 82810 (Graphics/Memory Controller Hub)
- Integrated Intel advanced graphics performance •

Optional 4MB dedicated graphics display cache

I/O Controller Hub (ICH)

- Intel ICH (82801AB/82801AA) I/O Controller Hub
- ATA-66
- Alert-on-LAN support w/ 82559 LAN controller (optional)
- 6 PCI request grant pairs (6 PCI Busmasters supported)
- Dual Universal Serial Bus channels
- Dual Channel Fast IDE interface supports PIO Modes 3 and 4, and Ultra DMA drives, DMA bus mastering drives and ATAPI CD-ROM drives
- PCI 2.2
- Integrated system power management supporting APM 1.2 and ACPI 1.0
- Integrated Real Time Clock
- CMOS battery-backed RAM, 128 bytes
- Socketed 3V lithium coin cell battery onboard

Firmware Hub (FWH)

- Intel FWH-4MB Firm Ware HUB in PLCC package

System Memory

- Two 3.3V 168-pin DIMM sockets
- Supports 16MB to 256MB (max) memory capacity (using 16MB/64MB technology); 512MB (using 128MB technology). Contact your authorized AST retailer for memory upgrade assistance.
- Supports single- or double-sided configurations
- Auto-configure, auto-detect
- SPD SDRAM

Graphics Subsystem

- Intel High Performance Graphics
- Integrated 2D and 3D engines
- Integrated H/W motion compensation engine
- Integrated 230MHz DAC
- Optional 4MB Graphics Display Cache (depending on the system you purchased).

Power Management

- APM 1.2
- ACPI 1.0 (Advanced Configuration and Power Interface)
- Power button sleep functionality (depress for 1-2 seconds during normal operation for Sleep; 4 seconds or longer for Off)
- Soft Off feature (Operating System controlled power off)
- Power down of ATAPI Green enabled devices
- Suspend all devices that support power down modes
- PCI Power Management signal, PME# pin routed from ICH to PCI connectors
- 3.3VSB power routed to PCI Connectors
- Fan Control

Audio Subsystem

- AC'97 v 2.1 w/ Intel ICH AC97 link
- Integrated ADI 1881 analog audio CODEC with ICH controller
- ICH AC'97 Features:
 - Independent PCI functions for audio & modem
 - Independent channels for PCM in/PCM out, microphone in
 - Left and right audio channels
 - Single modem line

- 16-bit stereo output/input, up to 48KHz
- Multiple sample rates
- 16 GPIOs

Intel 82559 Ethernet PCI BUS LAN Controller (optional)

- Network Interface Controller Subsystem
- RJ-45 connector w/ integrated LEDs
- 32-bit, 33MHz PCI Bus master interface
- IEEE 802.3 10Base-T and 100Base-T compatible, and 100 Base TX
- Full- or half-duplex capable at 10Mbps or 100Mbps
- Programmable transit threshold
- Early receive interrupt
- IEEE 802.3u Auto Negotiation support for 10Base-T, 10Base-T FDX, 100Base-TX FDX and 100Base-TX FDX-FC
- Parallel detection algorithm for legacy support of non-Auto-Negotiation enabled link partner

System BIOS

- Flash Memory Device (Intel Firmware Hub 80802A-B integrated in 810 chipset)
- AMI BIOS with Year 2000 support
- Legacy free BIOS
- Quick boot Power On Self Test
- Intel processor detection and initialization
- 82810 initialization module
- SPD 100MHz SDRAM support
- CD-ROM boot
- Auto detect of IDE drive type
- Universal Serial Bus support
- ACPI 1.0 compliant
- AC Power loss state retention management
- Support for 3 Mode floppy devices
- Plug and Play 1.0a specification, supports Windows 98
- ATA-66 support
- ATAPI support for IDE CD-ROM, tape drives
- WFM 2.0
- SMBIOS 2.3

Additional features

- Digital Interface, connector for Digital Video Interface support
- Integrated speaker
- PC98 & PC99 compliant

Mechanical

FlexATX form factor
USB-ready components (non-legacy devices)
Mobile CD-ROM Drive
Closed box (internal components)
Mini PCI slot (non-accessible)

Enhanced USB Mouse

- "Thumb wheel" feature fast-scrolls through windows and web pages without scroll bars
- Resumes system operation from Sleep (Power Management) mode

Environment

- Temperature (non-operating): 01 to **50**° C (32° to 122° F)
- Temperature(operating):5°to35°C(41°to95°F)
- Humidity (non-operating): 92% RH at +30° C (86° F)
- Humidity (operating): 90% RH (max.) at +30° C (86° F)

Specifications subject to change without notice.

4 Operating System & Software Recovery

If you ever need to restore your computer's operating system or component drivers, the following procedures should restore your system to normal operation.

Restoring Default Factory Configuration

WARNING *The following procedure will destroy all files stored on your hard disk drive. To avoid lost data, be sure to make a backup copy of any files you need to save.*

1. Have the following items nearby (included with your AST Computer):
 - **AST Recovery CD** and *Getting Started with Microsoft Windows 98* user's guide.
 - **Application CDs** for the software programs you need to restore (*for example, Microsoft Works Suite or Microsoft Office Small Business Edition*)
2. Press the eject button on your CD-ROM drive, then insert your **AST Recovery CD** into the tray (*labeled side up*). Close the CD-ROM tray.
3. Reboot your computer. (The AST Recovery CD is bootable, so the system will reboot automatically from the CD, not your Hard Disk Drive.)

4. After a few moments, you should see the following screen on your monitor. To restore your system to the factory default configuration, press 1 on your keyboard.

*1. Restore back to
Factory Default*

*To Select an option,
Please Press 1 or 2*

2. Exit

- . In a moment, you'll see the following warning message on your monitor. **Press the "Y" key on your keyboard to continue.** (If you press the 'W' key to exit, be sure to eject the Recovery CD from the CD-ROM drive to boot from your system's Hard Disk Drive)



3. Click on the + sign next to **Display Adapters**. Then double-click on **Standard PCI Graphic Adapter**.
4. Click on the **Driver** tab in the pop-up window, then click on the **Update Driver** button.
5. Click on **Next** twice, then click in the box next to **Specify a Location**, and click **Browse...** (If a window appears with the message, "A: is not accessible," click **Cancel**.)
6. From the **Browse for Folder** window, click on your CD-ROM Drive, then click on the folder for your system configuration (*e.g.*, **Drivers**). Click on **Video**, then click **OK**.

Note *The contents of your Browse for Folder window may appear slightly different than shown in the following illustration, depending on the AST product you purchased.)*

7. Click on **Next**, then click it again to Update the Driver (recommended). Click **Next** a third time, then click **Finish**. Finally, click **Yes** to restart your computer. The system will reboot, and the video should function normally.

Modem Drivers

1. From the Windows 98 Desktop, right-click on **My Computer**. Click on **Properties**, then click on the **Device Manager** tab. Look for **Other Devices**, then double-click on **PCI Communication Device**.
2. Click on the **Reinstall Driver** button.
3. Click **Next** twice, then click on **Browse**.
4. In the **Browse for Folder** window, click your CD-ROM Drive, then click the **Drivers** folder. Click on **Modem**, then click **OK**.
5. Click on **Next**, then click it again to Update the Driver (recommended). Click **Finish**. If the system prompts you to restart it, click **Yes**. The system will reboot, and the modem should function normally. Otherwise, if the PCI Modem Properties box still appears, click OK to close it.

Audio Drivers

1. From the Windows 98 Desktop, right-click on **My Computer**. Click on **Properties**, then click on the **Device Manager** tab. Look for **Other Devices**, then double-click on **PCI Multimedia Audio Device**.
2. Click on the **Reinstall Driver** button.
3. Click **Next** twice, then click on **Browse**.
4. In the **Browse for Folder** window, select your CD-ROM Drive, then select

the **Drivers** folder. Click on **Audio**, then click the **OK** button.

5. Click on **Next**, then click it again to Update the Driver (recommended). Click Next a third time. If the system prompts you to look for **files**, click **OK** (*this may happen several times*).
6. Click **Finish**. If the system prompts you to restart it, click **Yes**. Otherwise, if the PCI Audio Properties box still appears, click on **Close**.

Installing Other Software

Your system's AST Recovery CD restores your computer to its factory default software configuration. For installation of other supporting software programs, refer to the documentation included with the program for details.

5 Error Messages

| <u>Error Message</u> | <u>Explanation</u> |
|--|---|
| Extended RAM Failed at offset: <i>nnnn</i> Failing Bits: <i>nnnn</i> | Extended memory not working or not configured properly at offset <i>nnnn</i> . The hexadecimal number <i>nnnn</i> is a map of the bits at the RAM address (System, Extended, or Shadow memory) that failed the memory test. Each 1 in the map) indicates a failed bit. |
| Invalid NVRAM media type Keyboard controller error | Problem with NVRAM (CMOS) access. The keyboard controller failed test. Try replacing the keyboard. |
| Keyboard error Keyboard error <i>nn</i> | Keyboard not working. BIOS discovered a stuck key and displays the scan code <i>nn</i> for the stuck key. |
| Keyboard locked-Unlock key switch | Unlock the system to proceed. |
| Real time clock error | Real-time clock fails BIOS test. Many require motherboard repair. |
| Shadow RAM Failed at offset: <i>nnnn</i> | Shadow RAM failed at offset <i>nnnn</i> of the 64 KB block at which the error was detected. |
| System RAM Failed at offset: <i>nnnn</i> | System RAM failed at offset <i>nnnn</i> of the 64 KB block at which the error was detected. |
| System timer error | The timer test failed. Requires repair of system motherboard. |



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